

Precision pressure regulators LRP/LRPS

FESTO

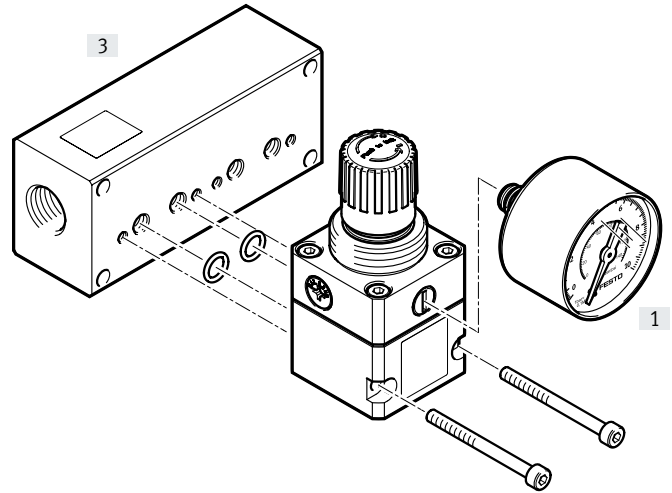
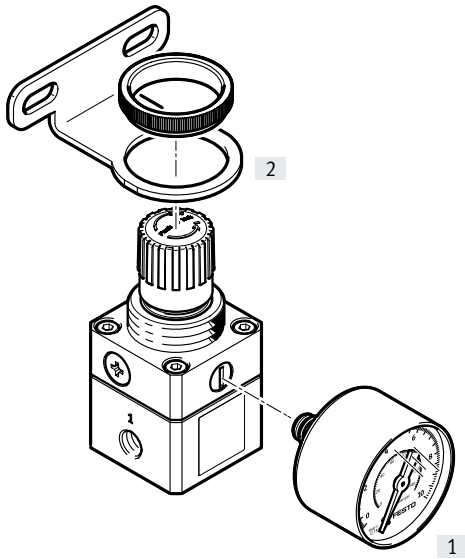


Peripherals overview

Peripherals overview

Precision pressure regulator LRP-1/8-6

Precision pressure regulator LRP-7.0-6



Mounting attachments and accessories

→ Page/Internet

[1]	Precision pressure gauge PAGN	16
[2]	Mounting bracket MS4-WR	16
[3]	Manifold block for manifold assembly of 2 or 4 valves MRS	14

Type codes

Type codes

001		Series	
LRP		Precision pressure regulator	
LRPS		Precision pressure regulator, lockable	

002		Pneumatic connection	
1/8		Female thread G1/8	
1/4		Female thread G1/4	
7.0		For sub-base diameter 7 mm	

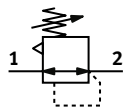
003		Pressure regulation range	
0,7		Up to 0.7 bar	
2,5		Up to 2.5 bar	
4		Up to 4 bar	
6		Up to 6 bar	
10		Up to 10 bar	




004		EU certification	
		None	
EX4		II 2GD	

005		Special material properties	
F1A		Recommended for production facilities for the manufacture of lithium-ion batteries	

Datasheet

Function



-  - Flow rate
300 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
1 ... 8 bar



LRP-1/8-6

LRP-7.0-6

Note

A manifold block MRS is required to connect the precision pressure regulator LRP-7.0-6 to the compressed air supply. The mounting kit with screws and sealing rings is included with the device.

The precision pressure regulator is suitable for sensitive applications that require a pressure hysteresis of 0.02 bar. The output pressure p_2 can be set within the pressure regulation range.

In the event of a failure of the compressed air supply, the output pressure p_2 is exhausted via port 3 (secondary exhausting).

- Precision pressure adjustment possible both in static and dynamic applications
- Operating pressure fluctuations are almost entirely compensated
- Good response characteristics during rapid changes to operating pressure and flow rate

General technical data

Type	LRP-1/8-6	LRP-7.0-6
Pneumatic connection 1, 2	G1/8	For sub-base with a diameter of 7 mm
Pressure gauge connection	G1/8	
Design	Piloted precision diaphragm regulator	
Regulator function	Output pressure constant, with secondary exhausting	
Type of mounting	With accessories Front panel mounting In-line installation	
Mounting position	Any	
Actuator lock	Rotary knob with latch	
Pressure regulation range [bar]	0.1 ... 6	
Max. pressure hysteresis [bar]	0.02	
Pressure indicator	Prepared for G1/8	

Standard nominal flow rate q_{nN} [l/min]

Type	LRP-1/8-6	LRP-7.0-6
Standard nominal flow rate [l/min]	300 ¹⁾	240 ²⁾

1) Measured at $p_1 = 8$ bar and $p_2 = 6$ bar, $\Delta p_2 = 100$ mbar.

2) Measured on manifold block MRS-4 at $p_1 = 8$ bar and $p_2 = 6$ bar, $\Delta p_2 = 100$ mbar.

Operating and environmental conditions

Operating pressure [bar]	1 ... 8
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Storage temperature [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress

1) More information: www.festo.com/x/topic/crc

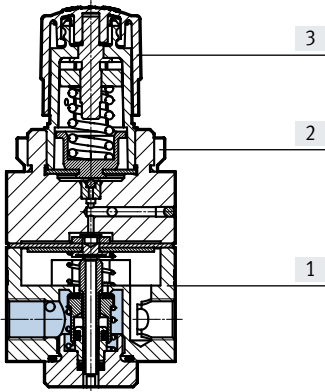
Datasheet

Weight [g]

Precision pressure regulator	200
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Materials

Sectional view

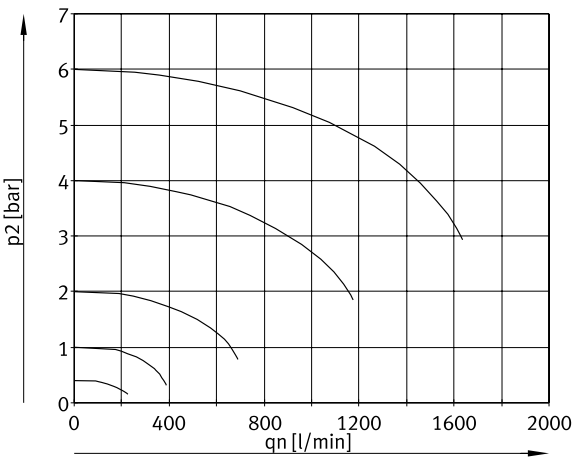


Precision pressure regulator

[1]	Housing	Aluminium
[2]	Knurled nut	Aluminium
[3]	Rotary knob	PA
-	Diaphragm, seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

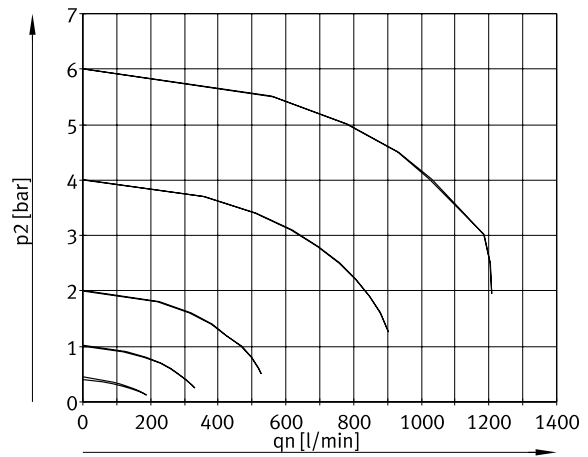
Standard flow rate q_n as a function of output pressure p_2

LRP-1/8-6



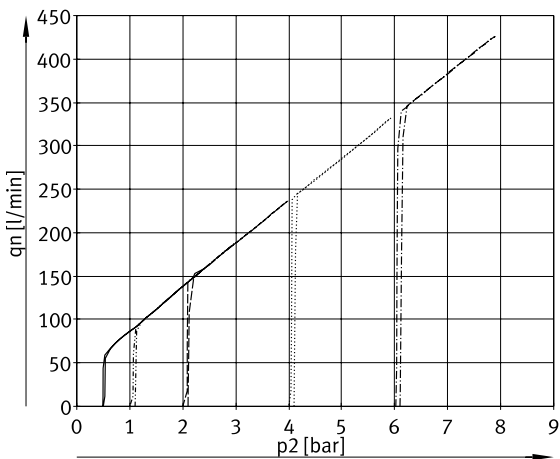
Operating pressure $p_1 = 8$ bar

LRP-7.0-6



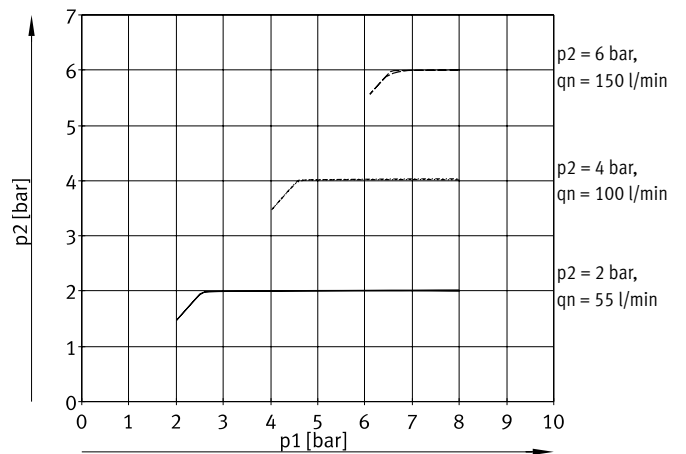
Operating pressure $p_1 = 8$ bar

Standard flow rate $q_{n2,3}$ through secondary exhausting as a function of output pressure p_2



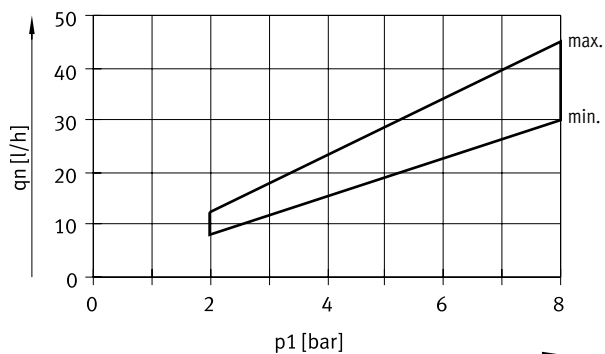
Operating pressure $p_1 = 8$ bar

Output pressure p_2 as a function of operating pressure p_1



Datasheet

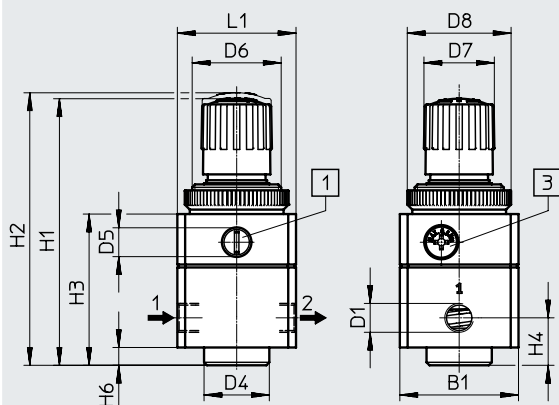
Internal air consumption q_n as a function of operating pressure p_1



Dimensions

Download CAD data → www.festo.com

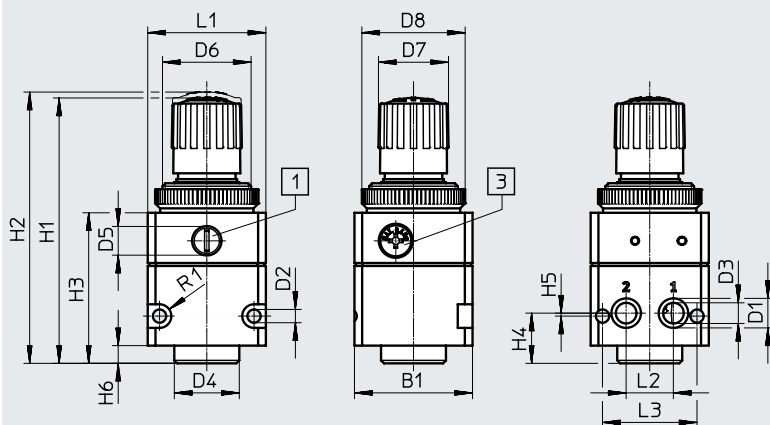
LRP-1/8-6



- [1] Pressure gauge connection
- [3] Flow control filter

→ Flow direction

LRP-7.0-6



- [1] Pressure gauge connection
- [3] Flow control filter

Type	B1	D1	D2	D3	D4	D5	D6	D7	D8	H1	H2	H3	H4	H5	H6	L1	L2	L3	R1
LRP-1/8-6	40	G1/8	-	-	22	G1/8	M30x1.5	24	35	~90	~92	51	16	-	6	40	-	-	-
LRP-7.0-6		Ø 10	4.5	7								17	1	16			32	4	

Ordering data

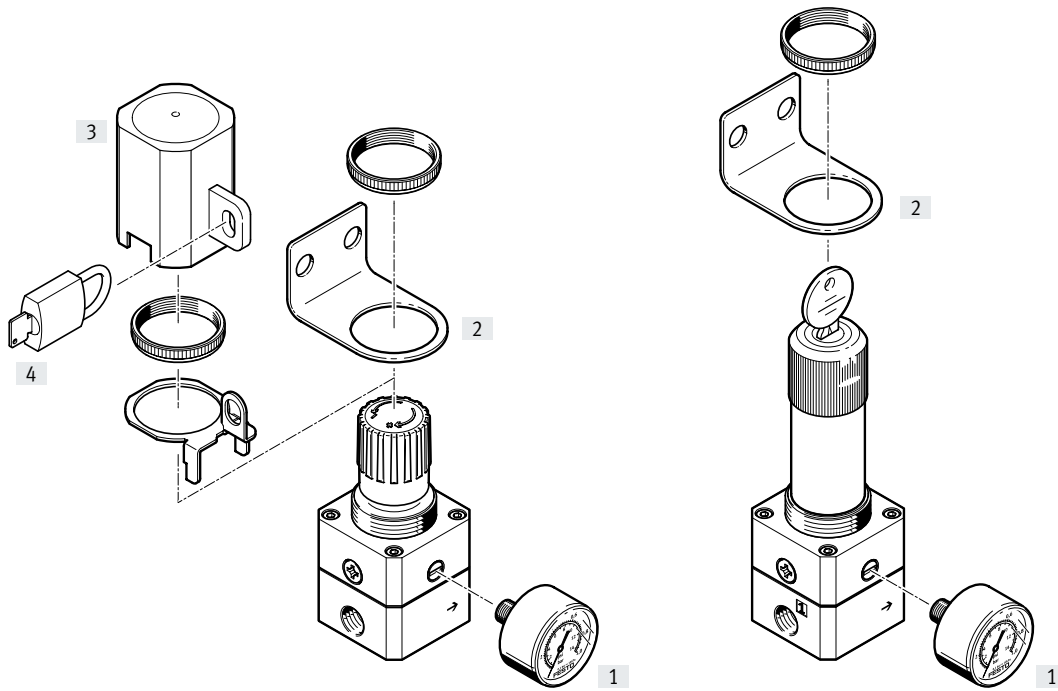
Pressure regulation range [bar]	Pneumatic connection 1, 2.	Part no.	Type
0.1 ... 6	G1/8	2416371	LRP-1/8-6
	For sub-base with a diameter of 7 mm	2418761	LRP-7.0-6

Peripherals overview

Peripherals overview

Precision pressure regulator LRP

Precision pressure regulator LRPS



Mounting attachments and accessories

→ Page/Internet

[1]	Precision pressure gauge MAP	16
[2]	Mounting bracket HR	15
[3]	Regulator lock with locking plate LRVS-LRP	15
[4]	Padlock LRVS-D	15

Type codes

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001	Series
LRP	Precision pressure regulator
LRPS	Precision pressure regulator, lockable

002	Pneumatic connection
1/8	Female thread G1/8
1/4	Female thread G1/4
7.0	For sub-base diameter 7 mm

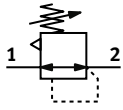
003	Pressure regulation range
0,7	Up to 0.7 bar
2,5	Up to 2.5 bar
4	Up to 4 bar
6	Up to 6 bar
10	Up to 10 bar





004	EU certification
	None
EX4	II 2GD

005	Special material properties
F1A	Recommended for production facilities for the manufacture of lithium-ion batteries

Datasheet

Function



-  - Flow rate
800 ... 2300 l/min
-  - Temperature range
-10 ... +60°C
-  - Operating pressure
1 ... 12 bar
-  - www.festo.com



The precision pressure regulator controls the operating pressure (secondary side) using a diaphragm pilot control. This acts on the main seat and thus improves the regulating characteristics.

- Precision pressure adjustment possible both in static and dynamic applications
- Pressure hysteresis of < 0.02 bar for flow rate characteristic curves
- Good response characteristics during rapid changes to input pressure and flow rate
- Input pressure fluctuations are almost entirely compensated
- Product variants LRP-...-EX4 can be used in zones 1 and 2 of explosive gas atmospheres and in zones 21 and 22 of explosive dust atmospheres

General technical data				
LRP/LRPS-1/4-...	0.7	2.5	4	10
Pneumatic connection 1, 2	G1/4			
Design	Piloted precision diaphragm regulator			
Regulator function	Output pressure constant, with secondary exhausting			
Type of mounting	With accessories			
	Front panel mounting			
	In-line installation			
Mounting position	Any			
Actuator lock	Rotary knob with latch			
	Rotary knob with integrated lock			
Pressure regulation range [bar]	0.05 ... 0.7	0.05 ... 2.5	0.05 ... 4	0.1 ... 10
Max. pressure hysteresis [bar]	0.02			
Pressure indicator	Prepared for G1/8			

Standard nominal flow rate ¹⁾ qnN [l/min]				
LRP/LRPS-1/4-...	0.7	2.5	4	10
Standard nominal flow rate [l/min]	800	1800	2000	2300

1) Measured at p₁ = 12 bar and Δp₂ = 100 mbar.

Operating and environmental conditions	
Operating pressure [bar]	1 ... 12
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4] Inert gases
Note on operating/pilot medium	Lubricated operation not possible
Ambient temperature [°C]	-10 ... +60
Temperature of medium [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress

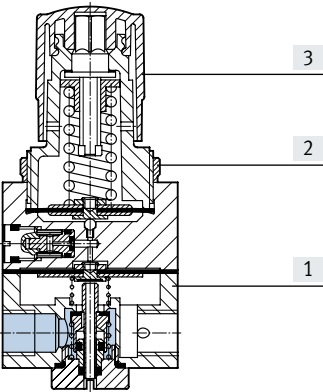
1) More information: www.festo.com/x/topic/crc

Weight [g]			
Type	LRP	LRP-...-EX4	LRPS
Precision pressure regulator	310	315	410

Datasheet

Materials

Sectional view



Precision pressure regulator

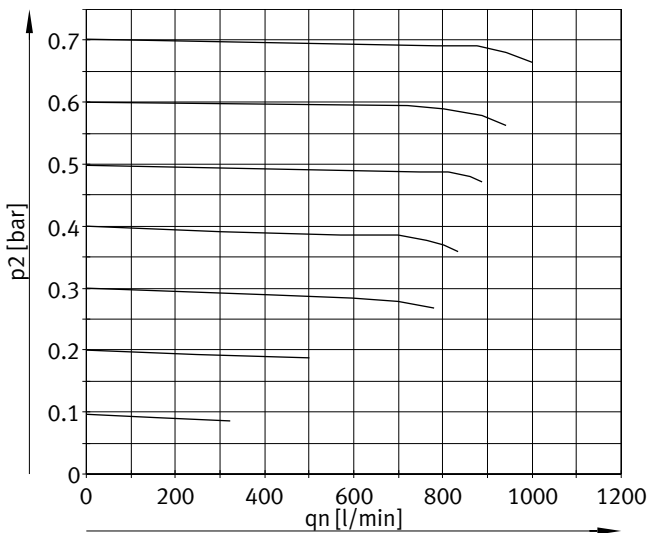
[1]	Housing	Die-cast aluminium
[2]	Knurled nut	Aluminium
[3]	Rotary knob	PA
-	Seals	NBR
Note on materials		RoHS-compliant
LABS (PWIS) conformity		VDMA24364-B1/B2-L

Additional material specifications – products for battery production (LRP-...-F1A)

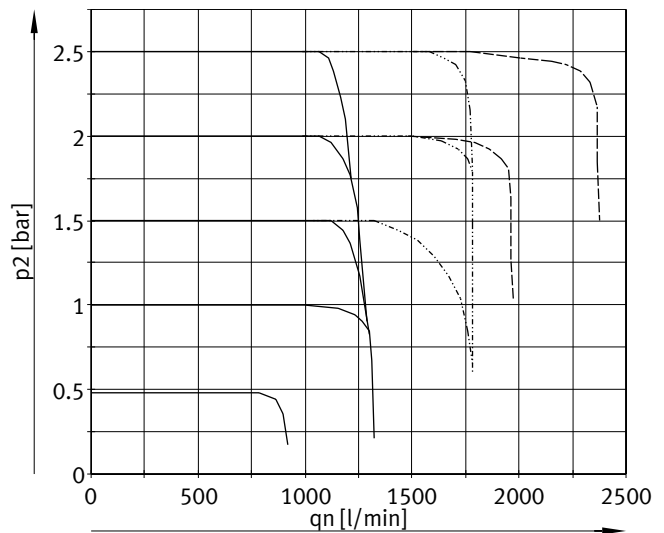
Suitable for the production of Li-ion batteries	Metals with more than 1% by mass of copper, zinc or nickel are excluded from use. Exceptions are nickel in steel, chemically nickel-plated surfaces, circuit boards, cables, electrical plug connectors and coils.
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Standard flow rate q_n as a function of output pressure p_2

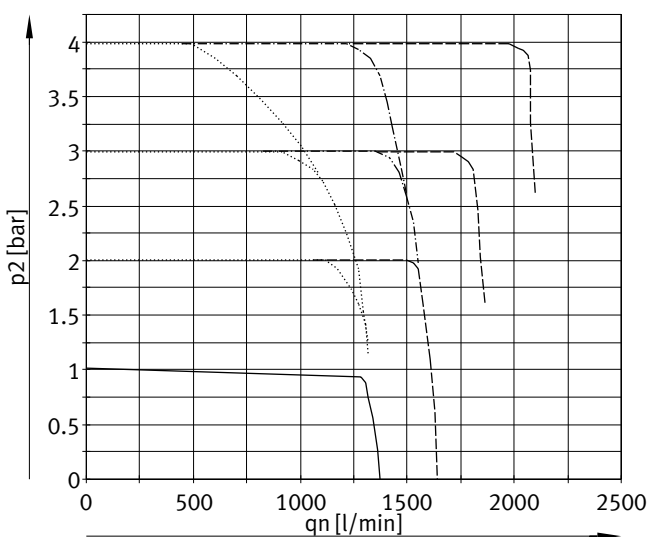
LRP/LRPS-1/4-0.7



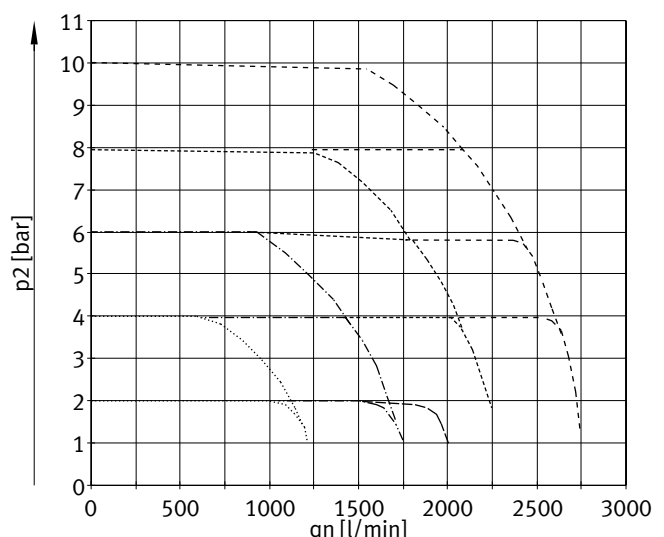
LRP/LRPS-1/4-2.5



LRP/LRPS-1/4-4



LRP/LRPS-1/4-10

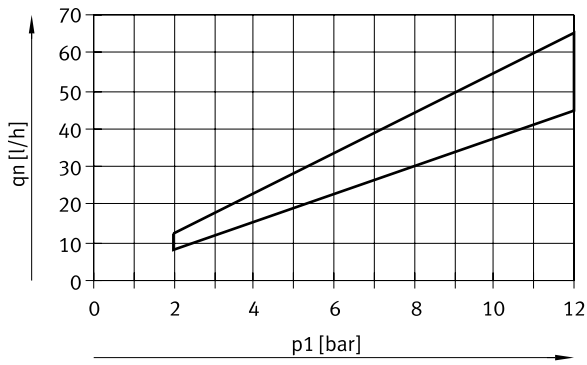


- Operating pressure $p_1 = 5 \dots 12$ bar
- · - · - Operating pressure $p_1 = 7 \dots 12$ bar
- - - - Operating pressure $p_1 = 10 \dots 12$ bar
- · · · · Operating pressure $p_1 = 5$ bar

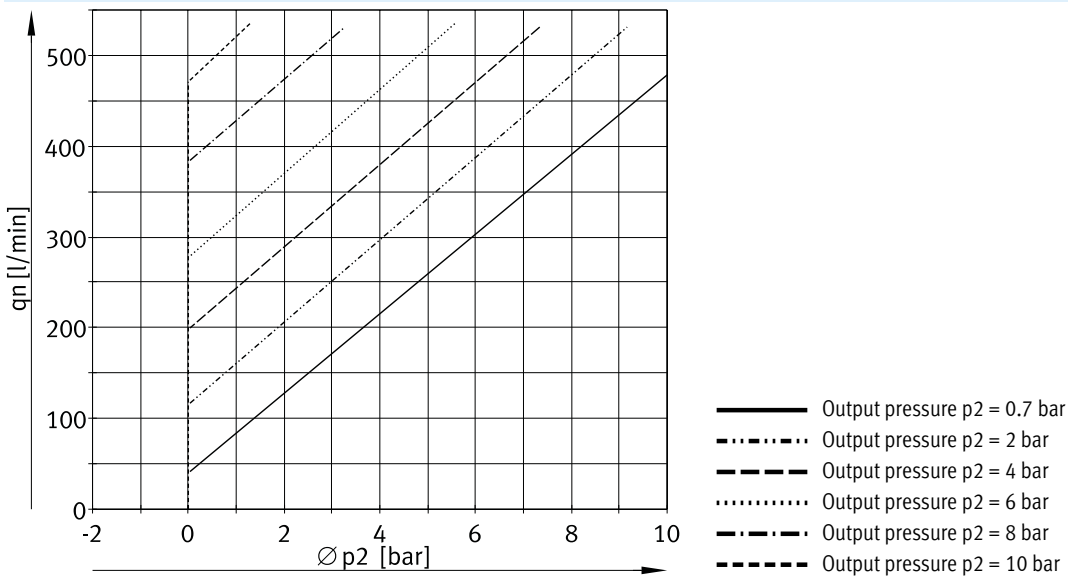
- · - · - Operating pressure $p_1 = 7$ bar
- - - - Operating pressure $p_1 = 10$ bar
- - - - Operating pressure $p_1 = 12$ bar

Datasheet

Internal air consumption q_n as a function of operating pressure p_1



Standard flow rate $q_{n_{2,3}}$ through secondary exhausting as a function of the output overpressure $\Delta p_2'$

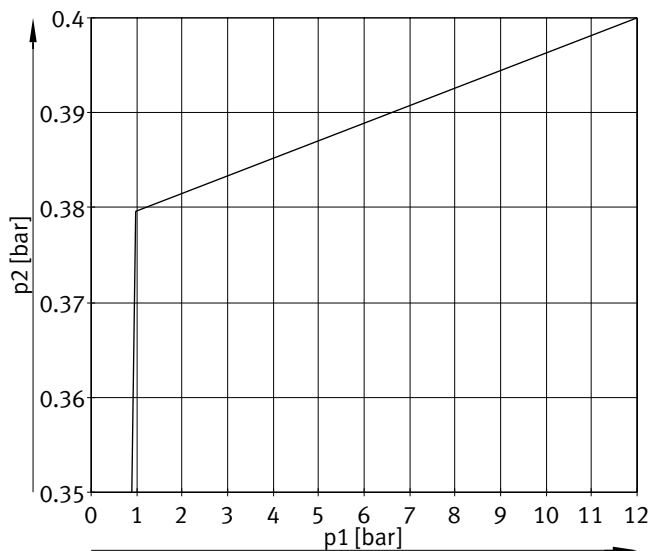


Operating pressure $p_1 = 5 \dots 12$ bar

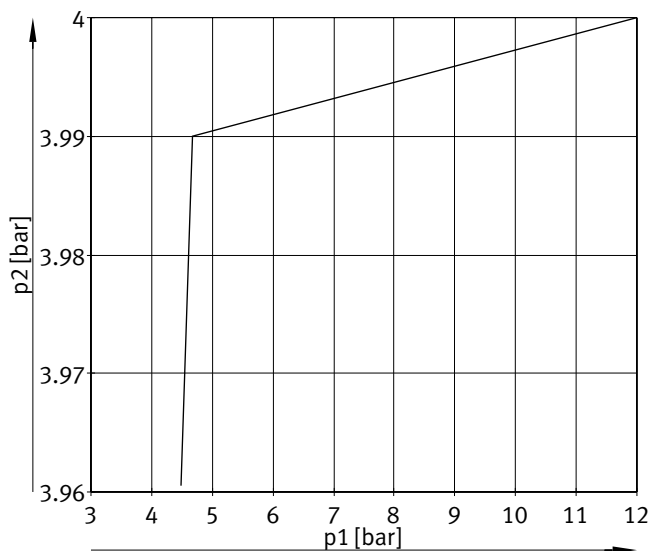
Datasheet

Output pressure p_2 as a function of operating pressure p_1

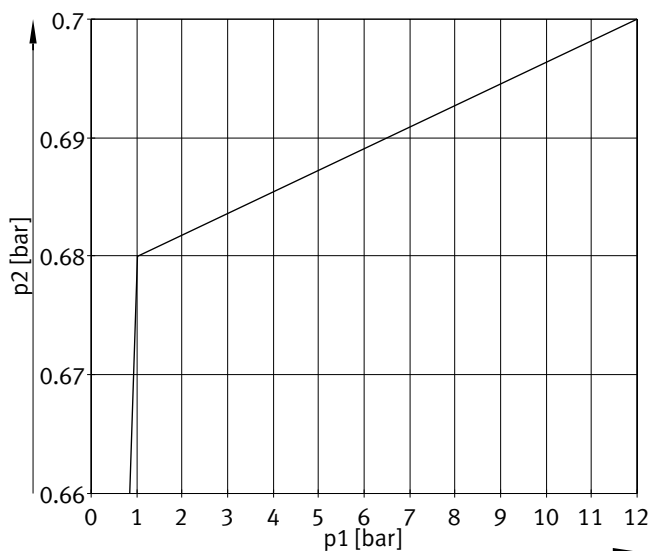
Primary pressure dependence $q_n = 35$ l/min



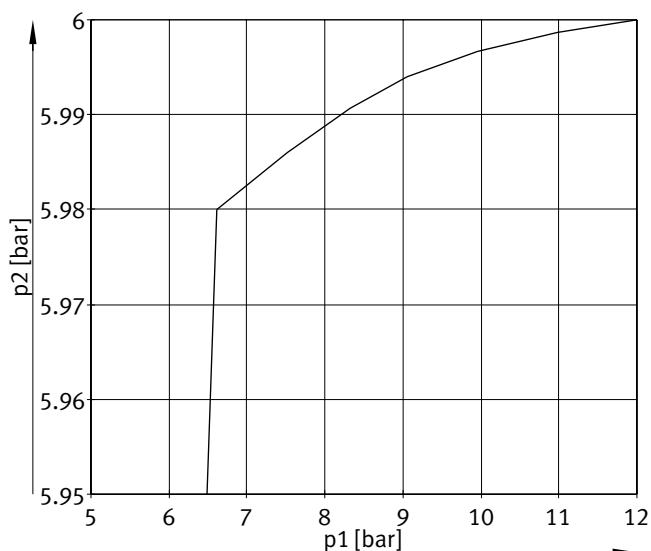
Primary pressure dependence $q_n = 220$ l/min



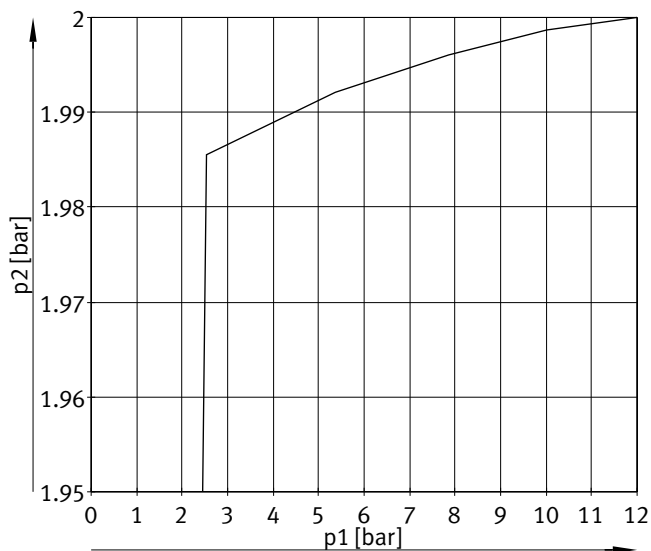
Primary pressure dependence $q_n = 55$ l/min



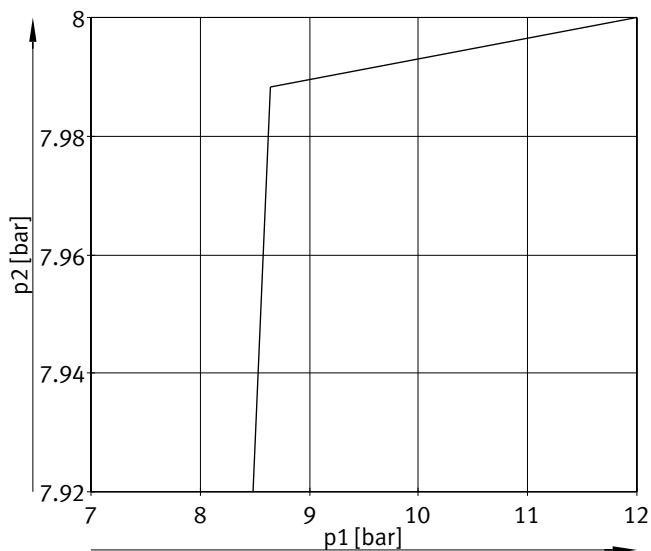
Primary pressure dependence $q_n = 340$ l/min



Primary pressure dependence $q_n = 120$ l/min



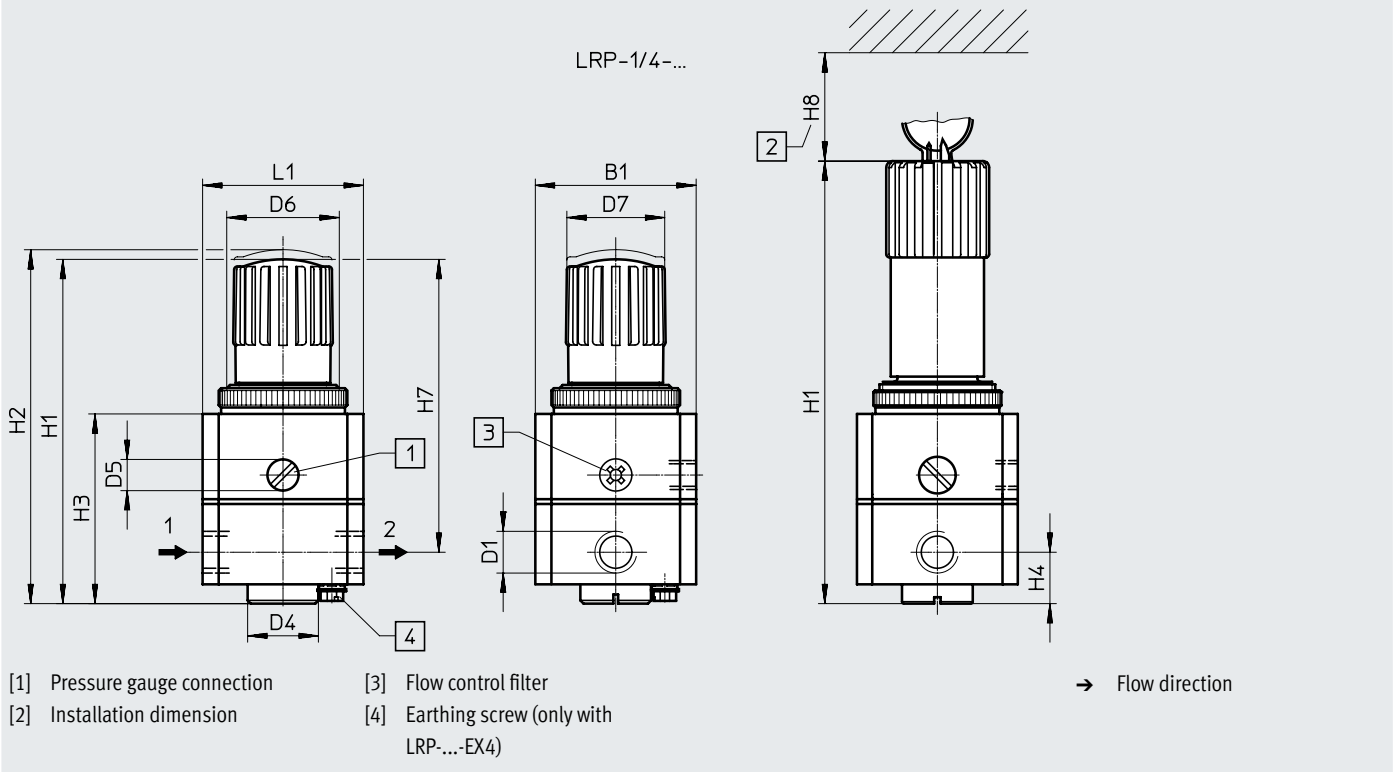
Primary pressure dependence $q_n = 420$ l/min



Datasheet

Dimensions

Download CAD data → www.festo.com



Type	B1	D1	D4 ∅	D5	D6	D7 ∅	H1	H2	H3	H4	H7	H8 min.	L1
LRP	50	G1/4	22	G1/8	M36x1.5	31	108	111	59	16	92	-	50
LRPS							138	-			-	60	

Ordering data

Pressure regulation range [bar]	Precision pressure regulator LRP		Lockable precision pressure regulator LRPS	
	Part no.	Type	Part no.	Type
0.05 ... 0.7	159500	LRP-1/4-0.7	194690	LRPS-1/4-0.7
0.05 ... 2.5	162834	LRP-1/4-2.5	194691	LRPS-1/4-2.5
0.05 ... 4	159501	LRP-1/4-4	194692	LRPS-1/4-4
0.1 ... 10	159502	LRP-1/4-10	194693	LRPS-1/4-10

For use in battery production

0.05 ... 0.7	8196140	LRP-1/4-0.7-F1A		
0.05 ... 2.5	8196141	LRP-1/4-2.5-F1A		
0.1 ... 10	8196142	LRP-1/4-10-F1A		

For use in potentially explosive areas in zones 1, 2 as well as 21, 22

0.05 ... 0.7	549918	LRP-1/4-0.7-EX4		
0.05 ... 2.5	549919	LRP-1/4-2.5-EX4		
0.05 ... 4	549920	LRP-1/4-4-EX4		
0.1 ... 10	549921	LRP-1/4-10-EX4		

Accessories

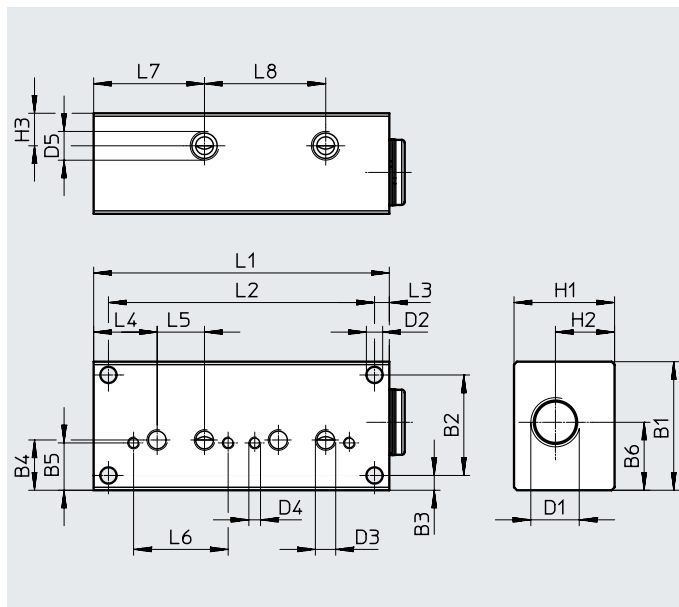
Manifold block MRS

For precision pressure regulator LRP-7.0-6

- For manifold assembly of 2 or 4 valves
- Continuous compressed air supply in the manifold block
- G3/8 connection for compressed air supply, G1/8 connections for working pressure
- Vacant positions can be sealed with blanking plugs

Operating pressure: -0.9 ... 10 bar

Material:
Wrought aluminium alloy
RoHS-compliant



Type	B1	B2	B3	B4	B5	B6	D1	D2	D3	D4	D5	H1	H2	H3
MRS-2	43.5	34	5	17	16	23	G3/8	5.5	M7	M4	G1/8	34	20	11
MRS-4														

Type	L1	L2	L3	L4	L5	L6	L7	L8	Max. tightening torque	
									Regulator mounting [Nm]	Wall mounting [Nm]
MRS-2	100	90	5	21.5	16	32	37.5	41	2.5	4
MRS-4	182	172								

Ordering data					
Pneumatic connection 1	Max. no. of valve positions	CRC ¹⁾	Weight [g]	Part no.	Type
G3/8	2	2	365	2844247	MRS-2
	4	2	650	2844348	MRS-4

1) More information: www.festo.com/x/topic/crc

Accessories

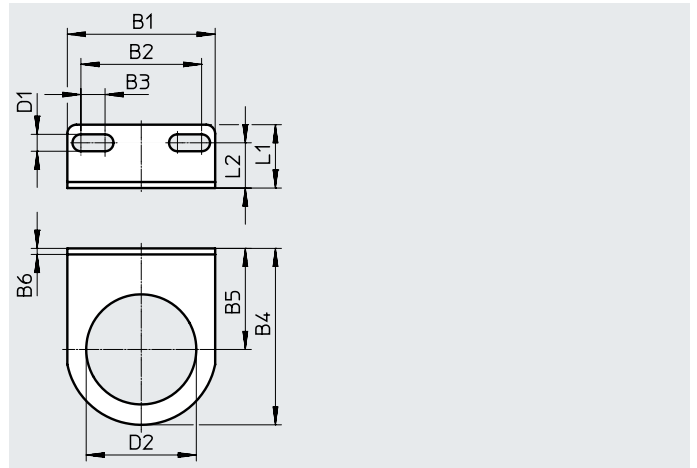
Mounting bracket HR

For precision pressure regulator
LRP/LRPS, size 50

- For wall mounting

Material:
Galvanised steel

LABS (PWIS) conformity:
VDMA24364-B1/B2-L



Dimensions and ordering data												Part no.	Type
B1	B2	B3	B4	B5	B6	D1 ∅	D2 ∅ +0.1	L1	L2	CRC ¹⁾			
49	40	8	58.5	33.5	2	5.6	36.5	21	15	2	159503	HR-1/4-P	
										4	8175928	HR-1/4-P-F1A ²⁾	

1) More information: www.festo.com/x/topic/crc

2) Recommended for production systems for manufacturing Li-ion batteries. More information: www.festo.com/x/topic/bat.

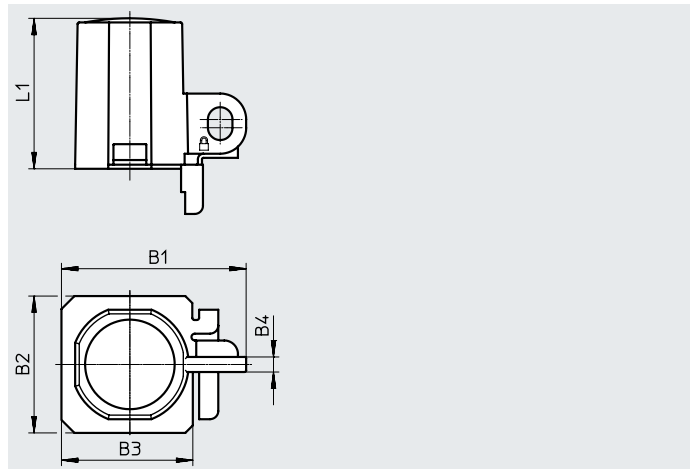
Regulator lock LRVS-LRP

For precision pressure regulator LRP,
size 50

Material:
Cap: Polyacetal
Locking plate: Steel
Knurled nut: Aluminium

LABS (PWIS) conformity:
VDMA24364-B1/B2-L

Ambient temperature:
-20 ... +60°C



Dimensions and ordering data							Part no.	Type
B1	B2	B3	B4	L1	Weight [g]			
67.5	50	48	5.5	55	36	193785	LRVS-LRP-1/4	

Padlock LRVS-D

For precision pressure regulator LRP,
size 50

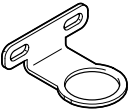
Material:
Housing: Brass


LABS (PWIS) conformity:
VDMA24364-B1/B2-L



Ordering data		Part no.	Type
Weight [g]			
120		193786	LRVS-D

Accessories

Ordering data – Mounting bracket MS4-WR				Datasheets → Internet: ms4-wr	
	Description	Weight [g]	Part no.	Type	
	For precision pressure regulator LRP, size 40, for wall mounting	49	526064	MS4-WR	

Ordering data – Precision pressure gauge MAP/PAGN						
	Nominal size	Pneumatic connection	Display range		Part no.	Type
			Outer scale	Inner scale		
	Precision pressure gauge MAP, EN 837-1					Datasheets → Internet: map
	40	R1/8	0 ... 1 bar	0 ... 15 psi	161126	MAP-40-1-1/8-EN
			0 ... 4 bar	0 ... 58 psi	162842	MAP-40-4-1/8-EN
			0 ... 6 bar	0 ... 87 psi	161127	MAP-40-6-1/8-EN
			0 ... 16 bar	0 ... 232 psi	161128	MAP-40-16-1/8-EN
Precision pressure gauge PAGN, EN 837-1					Datasheets → Internet: pagn	
40	R1/8	0 ... 10 bar	0 ... 145 psi	2849914	PAGN-40-10-R18-1.6	
		0 ... 1 MPa	0 ... 10 bar	2849916	PAGN-40-1M-R18-1.6	